

CLAIMS

What is claimed is:

1. An apparatus for absorbing energy in a collapsible steering column of a vehicle by being deformable in response to an excessive frontal impacting force to the steering column so that injury to the vehicle operator is reduced comprising:

a first steering column member;

a second steering column member connected to said first steering column member for sliding movement;

a first anvil associated with a said first steering column member;

a second anvil associated with said second steering column member; and

an energy absorbing member having a first portion extending around and operable to be drawn over said first anvil and a second portion extending around and operable to be drawn over said second anvil.

2. The apparatus of claim 1 including a locking device associated with said energy absorbing member to lock one of said first and second portions relative to the respective anvil.

3. The apparatus of claim 2 wherein said energy absorbing member absorbs energy at a first rate as said first portion is drawn over said first anvil and absorbs energy at a second rate as said second portion is drawn over said second anvil, said first and second rates being different from one another.

4. The apparatus of claim 3 wherein said one of said first and second portions locked by said locking device relative to said respective anvil corresponds to a lower of said first and second rates.

5. The apparatus of claim 2 wherein one of said first and second anvils is releasably associated with the respective steering column member.

6. The apparatus of claim 2 wherein said locking device includes a first surface and a second surface movably positioned with respect to one another and

wherein said energy absorbing member extends between said first and second surfaces so that said energy absorbing member is selectively compressible between said first and second surfaces to generate frictional resistance to movement of said energy absorbing member relative to said first and second surfaces.

7. The apparatus of claim 6 wherein one of said first and second surfaces is defined by one of said first and second anvils.

8. The apparatus of claim 7 wherein said locking device includes a releasing device operable to separate said one anvil from the respective steering column member and, after said releasing device releases said one anvil, said energy absorbing member moves said one anvil closer to the other of said first and second surfaces in response to said sliding movement to compress said energy absorbing member between said first and second surfaces.

9. The apparatus of claim 8 wherein said releasing device includes a pyrotechnic charge.

10. The apparatus of claim 8 wherein said locking device includes a third surface fixedly spaced from said other surface and movably positioned with respect to said one surface wherein said energy absorbing member extends between said third surface and said one surface so that said energy absorbing member is selectively compressible between said third surface and said one surface to generate frictional resistance to movement of said energy absorbing member relative to said third surface and said one surface.

11. The apparatus of claim 10 wherein said other surface and said third surface are spaced a first distance from one another and said one anvil being wider than said first distance.

12. The apparatus of claim 2 wherein said energy absorbing member defines an aperture and said locking device includes a pin releasibly inserted in said

aperture.

13. An apparatus for absorbing energy in a collapsible steering column of a vehicle by being deformable in response to an excessive frontal impacting force to the steering column so that injury to the vehicle operator is reduced comprising:

- a first steering column member;
- a second steering column member connected to said first steering column member for sliding movement;
- a first anvil associated with a said first steering column member;
- a second anvil associated with said second steering column member;
- an energy absorbing member having a first portion extending around and operable to be drawn over said first anvil and a second portion extending around and operable to be drawn over said second anvil wherein said energy absorbing member absorbs energy at a first rate as said first portion is drawn over said first anvil and absorbs energy at a second rate as said second portion is drawn over said second anvil, said first rate being lower than said second rate; and
- a locking device associated with said energy absorbing member to lock said first portion relative to said first anvil.

14. The apparatus of claim 13 wherein said locking device includes a first surface and a second surface movably positioned with respect to one another and wherein said energy absorbing member extends between said first and second surfaces so that said energy absorbing member is selectively compressible between said first and second surfaces to generate frictional resistance to movement of said energy absorbing member relative to said first and second surfaces and wherein said first surface is defined by said first anvil.

15. The apparatus of claim 14 wherein said locking device includes a releasing device operable to separate said first anvil from said first steering column member and, after said releasing device releases said first anvil, said energy absorbing member moves said first anvil closer to said second surface in response to said sliding movement to compress said energy absorbing member between said first and second

surfaces.

16. The apparatus of claim 15 wherein said locking device includes a third surface fixedly spaced from said second surface and movably positioned with respect to said first surface and wherein said energy absorbing member extends between said second surface and said third surface so that said energy absorbing member is selectively compressible between said second and said third surfaces to generate frictional resistance to movement of said energy absorbing member relative to said second and said third surface.

17. The apparatus of claim 16 wherein said first and third surfaces are spaced a first distance from one another and said first anvil being wider than said first distance.

18. The apparatus of claim 13 wherein said energy absorbing member defines an aperture and said locking device includes a pin releasibly inserted in said aperture.

19. The apparatus of claim 13 wherein said first portion and said second portion have different widths.